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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,582	09/05/2003	Keiji Kashima	123772	7331

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EXAMINER	
QI, ZHI QIANG	
ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 11/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/655,582	KASHIMA, KEIJI	
	Examiner	Art Unit	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2006 and 03 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 13-50* is/are pending in the application.

4a) Of the above claim(s) *3-5,7-11,14-37 and 44-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6,13 and 38-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 3, 2006 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,646,701 B2 (Lyu et al) in view of US 5,895,106 (VanderPloeg et al), US 5,504,603 (Winker et al) and US 5,403,510 (Kajiyama et al)

Regarding claims 1 and 13, **Lyu** teaches (col.7, line 38 – col.8, line 8; Fig.14) A-plate compensation film (21) and C-plate compensation film (31). When the liquid crystal display device assembled together, the A-plate (21) and the C-plate (31) would be laminated together to form a laminated retardation optical element, and the C-plate (31) is optically bonded to a surface of the A-plate (21).

As evidence, **VanderPloeg** teaches (col.8, lines 60-61; Fig.1) retarders (2) and (4) being laminated or formed together as one unit. VanderPloeg further teaches (col.10, line 57 – col.11, line 6; Fig.1) that the negative retarder (4) is C-plate and being laminated together to form a single sheet. Such that "laminated" means the sheets laminated together as a single sheet such as the A-plate and the C-plate of Lyn being laminated as a single sheet that would be optically bonded (any laminated together as a single sheet could be no air gap, and having optical effect would be optically bounded).

Lyu and VanderPloeg do not explicitly teach that the C-plate acts as a negative C-plate; and the A-plate and the C-plate using cross-linked liquid crystal such as a cross-linked nematic liquid crystal, and a cross-linked chiral nematic which means using substantially same material so that the difference between the mean refractive indices for the A-plate and the C-plate is 0.05 or less.

Winker teaches (col.9, lines 36-40) that using negative C-plate increases the contrast ratio at large fields of view.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the compensation films of Lyu and VanderPloeg with the teachings of using negative C-plate as taught by Winker, since the skilled in the art would be motivated for achieving a high contrast ratio at large fields of view (see col.9, lines 36-40) as using C-plate compensation significantly reduce the light leakage (see col.6, lines 40-52).

Lyu , VanderPloeg and Winker lack using cross-linked liquid crystal as material for the A-plate and the C-plate that means using substantially same material so that the

difference between the mean refractive indices for the A-plate and the C-plate is 0.05 or less.

Kajiyama teaches (col.4, lines 19 – 44) that using the cross-linked reaction, the opaque degree of the composite film is high at the opaque state. Kajiyama further teaches (col.5, lines 7-31) that the cross-linked material having a high dielectric constant and easily disperse an applied voltage so that the device uniformly display image over all the surface of the device. Because using same material for the retardation layers, the mean refractive indices would be close to each other. As a general available knowledge, the same material having the same property, and the difference between the mean refractive indices would be small (the same material or nearly same material having the same or nearly same mean refractive index, and the difference would be zero or nearly zero, i.e., less than 0.05). Therefore, the difference of the mean refractive indices is 0.05 or less would have been at least obvious.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the compensation films of Lyu , VanderPloeg and Winker with the teachings of using cross-linked material as taught by Kajiyama, since the skilled in the art would be motivated for achieving uniformly display image over all the surface of the device as cross-linked polymer for a material of the A-plate and the C-plate would easily disperse an applied voltage (see col.5, lines 7-31).

3. Claims 2, 38-40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyu, VanderPloeg, Winker and Kajiyama as applied to claims 1 and 13 above, and further in view of US 2004/0095532 A1 (Parri et al).

Regarding claim 2, Lyu, VanderPloeg, Winker and Kajiyama teach the invention set forth above except for that the A-plate is a λ/4 retardation layer.

Parri teaches (paragraph 0054) that A-plate being used as a QWE (quarter wave film, i.e.,λ/4 retardation layer) would improve off-axis luminance and color shift.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the compensation films of Lyu, VanderPloeg, Winker and Kajiyama with the teachings of λ/4 retardation layer as A-plate as taught by Parri, since the skilled in the art would be motivated for improving the display brightness as A-plate used as a quarter wave film would improve off-axis luminance and color shift (see paragraph 0054).

Regarding claim 38, Lyu further teaches (col.1, lines 11-13; col. 7, line 38- col.8, line 8; Fig.14) that a vertical alignment (VA) mode liquid crystal cell comprising a pair of polarizers (10, 11) between which the liquid crystal cell (50) is sandwiched, and the compensation films (A-plate 21, C-plate 31) (when assembly the device, the A-plate 21 and the C-plate 31 would be laminated as the laminated retardation layer) placed between the liquid crystal cell (50) and polarizer (10); and the C-plate is situated on a side close to the liquid crystal cell (50). The claim 38 contains using the retardation layer of the claim 2, that limitation would be met in the claim 2, i.e., the A-plate is a λ/4 retardation layer.

Regarding claim 39, Lyu further teaches (col. 7, line 38- col.8, line 8; Fig.14) that an additional A-plate (20) placed on the liquid crystal cell (50) on a side opposite to the compensation films (A-plate 21, C-plate 31) (when assembled the device, the A-plate 21

and the C-plate 31 would be laminated as the laminated retardation layer). As the explanation above, the A-plate is a λ/4 retardation layer that is already met in the claim 2.

Regarding claim 40, Lyu further teaches (col. 7, line 38- col.8, line 8; Fig.14) that an additional polarization layer (11) placed on the additional A-plate (20) (using λ/4 retardation) on a side of opposite to the liquid crystal cell (50), and the function would be the light passing through the additional λ/4 retardation layer (A-plate 20) and controlling the state of polarization of light.

Regarding claim 43, Lyu further teaches (col.4, line 45- col.5, line 4; Figs.1B and 2) that the liquid crystal layer (100) is sealed by sealant (200), and the liquid crystal molecules (3) sealed in the liquid crystal cell are twisted that would be inclined in two or more different directions when an electric field is applied.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyu, VanderPloeg, Winker and Kajiyama as applied to claims 1 and 13 above, and further in view of US 2004/0051831 A1 (Su Yu et al).

Regarding claim 6, Lyu, VanderPloeg, Winker and Kajiyama teach the invention set forth above except for that the C-plate retardation layer has a thickness of 5 μm or less.

Su Yu teaches (paragraph 0058) that the thickness of the negative retardation film is 1–4 μm, preferably 2-3 μm, i.e., less than 5 μm. Su Yu further teaches (paragraph 0062) that reducing the thickness of the films, the birefringence would easily be controlled.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. (see MPEP. 2144.05 I.)

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the compensation film of Lyu, VanderPloeg, Winker and Kajiyama with the teachings of the thickness of the negative retardation film as taught by Su Yu, since the skilled in the art would be motivated for achieving easily controllable the birefringence (see paragraph 0062).

5. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyu, VanderPloeg, Winker, Kajiyama and Parri as applied to claims 1-2, 13, 38-40 and 43 above, and further in view of US 2005/0151896 A1 (Hara et al).

Regarding claims 41-42, Lyu, VanderPloeg, Winker, Kajiyama and Parri teach the invention set forth above except for that an angle between an axis of phase advance of the additional $\lambda/4$ retardation layer and an axis of transmission of the additional polarization layer is 45 ± 2 degree; and an angle between an axis of phase advance of the additional $\lambda/4$ retardation layer and the laminated retardation optical element is substantially equal to 90 degree.

Hara teaches (paragraph 0122; Fig.5) that the angle formed by the polarization axis of the polarizer and the axis of the quarter wavelength plate in the set 1 and set 2 should be 45 degree and –45 degree theoretically in an ideal system (the angle between the axis of the two quarter wavelength plate 407and 405 would be substantially equal to 90 degree as shown in Fig.5), and the angle is adjusted to a limited range of $\pm$ 5 degree (that means less than $\pm$5 degree, and that is close to the $\pm$ 2 degree), and that

would solve the coloration problem so as to optimize the entire system (see paragraph 0122).

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the compensation films of Lyu, VanderPloeg, Winker, Kajiyama and Parri with the teachings of the angle set for the polarizer, retardation as taught by Hara, since the skilled in the art would be motivated for solving the coloration problem so as to optimize the entire system (see paragraph 0122).

Response to Arguments

6. Applicant's arguments filed on August.28, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the references do not teach or suggest that the C plate retardation layer is optically bounded to a surface of the A plate retardation layer no air gap and using cross linked liquid crystal material and the difference between the mean refractive indices less than 0.05, it is respectfully pointed out that Lyu teaches (col.7, line 38 – col.8, line 8; Fig.14) A-plate compensation film (21) and C-plate compensation film (31) and when the liquid crystal display device assembled together, the A-plate (21) and the C-plate (31) would be laminated together to form a laminated retardation optical element, and the C-plate (31) is optically bonded to a surface of the A-plate (21). As evidence, VanderPloeg teaches (col.8, lines 60-61; Fig.1) retarders (2) and (4) being laminated or formed together as one unit. VanderPloeg further teaches (col.10, line 57 – col.11, line 6; Fig.1) that the negative

retarder (4) is C-plate and being laminated together to form a single sheet. Such that "laminated" means the sheets laminated together as a single sheet such as the A-plate and the C-plate of Lyn being laminated as a single sheet that would be optically bonded (any laminated together as a single sheet could be no air gap, and having optical effect would be optically bounded). Further, Kajiyama teaches (col.4, lines 19 – 44) that using the cross-linked reaction, the opaque degree of the composite film is high at the opaque state. Kajiyama further teaches (col.5, lines 7-31) that the cross-linked material having a high dielectric constant and easily disperse an applied voltage so that the device uniformly display image over all the surface of the device. Because using same material for the retardation layers, the mean refractive indices would be close to each other. As a general available knowledge, the same material having the same property, and the difference between the mean refractive indices would be small (the same material or nearly same material having the same or nearly same mean refractive index, and the difference would be zero or nearly zero, i.e., less than 0.05). Therefore, the difference of the mean refractive indices is 0.05 or less would have been at least obvious.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mike Qi
Patent examiner
November 14, 2006